MCQs:

1. When a wave is reflected from a denser medium, the change in phase is:
a. 0 b. π c. 2π d. 3π

2. A stationary wave is represented by: $y = A\,sin(100t)\,cos(0.01x)$ where *A & y are in millimeters, t in sec and x in meter*. The velocity of wave is:
a. $10^2\ ms^{-1}$ b. $10^3\ ms^{-1}$ c. $10^4\ ms^{-1}$ d. $10^5\ ms^{-1}$

3. The equation of a stationary wave is $y = 5\,sin\frac{\pi x}{3}\,cos\,40\pi\,t$, where x and y in cm and t is second. Then the separation between two consecutive node is:
a. $12\ cm$ b. $6\ cm$ c. $3\ cm$ d. $1.5\ cm$

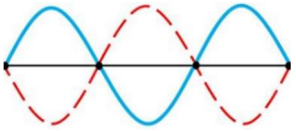
4. The displacement of an elastic wave is given by the function $y = 3sin\,\omega t + 4cos\omega t$, where y is in cm and t is in sec. The resultant amplitude is
a. $3\ cm$ b $4\ cm$ c. 5 cm d. $7\ cm$

5. Two waves produced displacement at a point given by: $y_1 = a\sin\omega t$ & $y_2 = a\,sin(wt + \pi/2)$. The resultant amplitude is:
a. 0 b. $2a$ c. $\sqrt{2}a$ d. $a/\sqrt{2}$

6. In stationary wave the particle velocity at the nodal positions is
a. maximum and finite b. minimum but non-zero c. zero d. infinite

7. The amplitude of superposition of two waves $y_1 = 5\,sin\,\omega t$ and $y_2 = 5\,cos\omega t$ is
a. 0 b. 5 c. $5\sqrt{2}$ d. 10

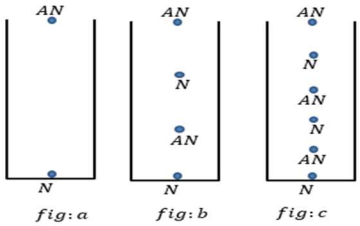
8. A standing wave is shown in the figure. The number of nodes and antinodes are



a. 4 nodes 3 antinodes b. 3 nodes, 4 antinodes
c. 3 nodes, 3 antinodes d. 4 nodes, 4 antinodes

10. 9. An open organ pipe and a close organ pipe resonate with same tuning fork. The ratio of the lengths of open pipe to close pipe remains in the ratio.
a. 2:1 b. 1:2 c. 1:4 d. 4:1

11. The figure alongside shows three different modes of vibrations in a closed organ pipe. The ratio of frequencies in figure a, b, and c respectively is:



a.1: 2: 3 b. 1: 3: 5
c.3: 2: 1 d. 5: 3: 1

12. In resonating air column, the waves produced are
a. stationary longitudinal waves b. transverse progressive waves
c. stationary transverse waves d. longitudinal progressive

13. An empty vessel is filled with water, its frequency
a. increases b. decreases c. unchanged d. none of these

14. The end correction of resonance tube is $1.0cm$. Then the diameter of the tube is nearly
a. 1.65cm b. 2 cm c. 3.3 cm d. $6.6cm$

15. When the prongs of the tuning fork are cut, its frequency
a. decreases b. increases
c. remains unchanged d. may increase or decreases

16. When one of the prongs of the tuning fork is broken and the tuning fork is vibrated, its vibrations
a. Are maintained equally well b. Are maintained better
c. Initially intensity increases but its vibrations soon die out
d. Initially intensity decreases but its vibrations are maintained for a longer time

17. The fundamental frequency of a closed organ pipe is $\boldsymbol{f}$. If its length is doubled and radius is halved, its frequency will become nearly
a. $f/_2$ b. $f/_3$ c. $2f$ d. f

18. What is the effect of increase in temperature on frequency of sound produced by an organ pipe?
a. Increases b. Decreases c. erratic change d. no effect